Answer on Question #40424 – Math - Combinatorics | Number Theory

Make a formal definition of isomorphism of BIBDs D1 = (V1; B1) and D2 =(V2; B2).

Explanations.

Let $V = \{P_i\}_{i=1}^{v}$ be a finite set of points, and let $\mathcal{B} = \{B_j\}_{j=1}^{b}$ be a finite collection of k-element subsets of V, called blocks. If any 2-element subset of V is contained in exactly λ blocks of $\mathcal{B}$, then $D = (V, \mathcal{B})$ is a $2 - (v, k, \lambda)$ design, or ***balanced incomplete block design*** (BIBD). Each point of D is contained in r blocks. We shall call two blocks B_1 and B_2 equal if they contain exactly the same points, and two designs $D_1 = (V_1, \mathcal{B}_1)$ and $D_2 = (V_2, \mathcal{B}_2)$ equal if $V_1 = V_2$ and $\mathcal{B}_1 = \mathcal{B}_2$.

A definition.

Two designs are isomorphic if there exists a bijection from the point and block sets of the first design to respectively the point and block sets of the second design, and if this bijection does not change the block incidence.